Conspicuous Consumption: Vehicle Purchases by Non-Prime Consumers

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[1]The views expressed in this article are those of the authors and do not necessarily represent the views of the Federal Reserve Bank of Dallas or the Federal Reserve System.

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  - $\Rightarrow$ Purchase luxury goods to **keep up with the Joneses**
- $\Rightarrow$ Purchase **more** conspicuous luxury goods than what the inherent functionality of the goods warrants.

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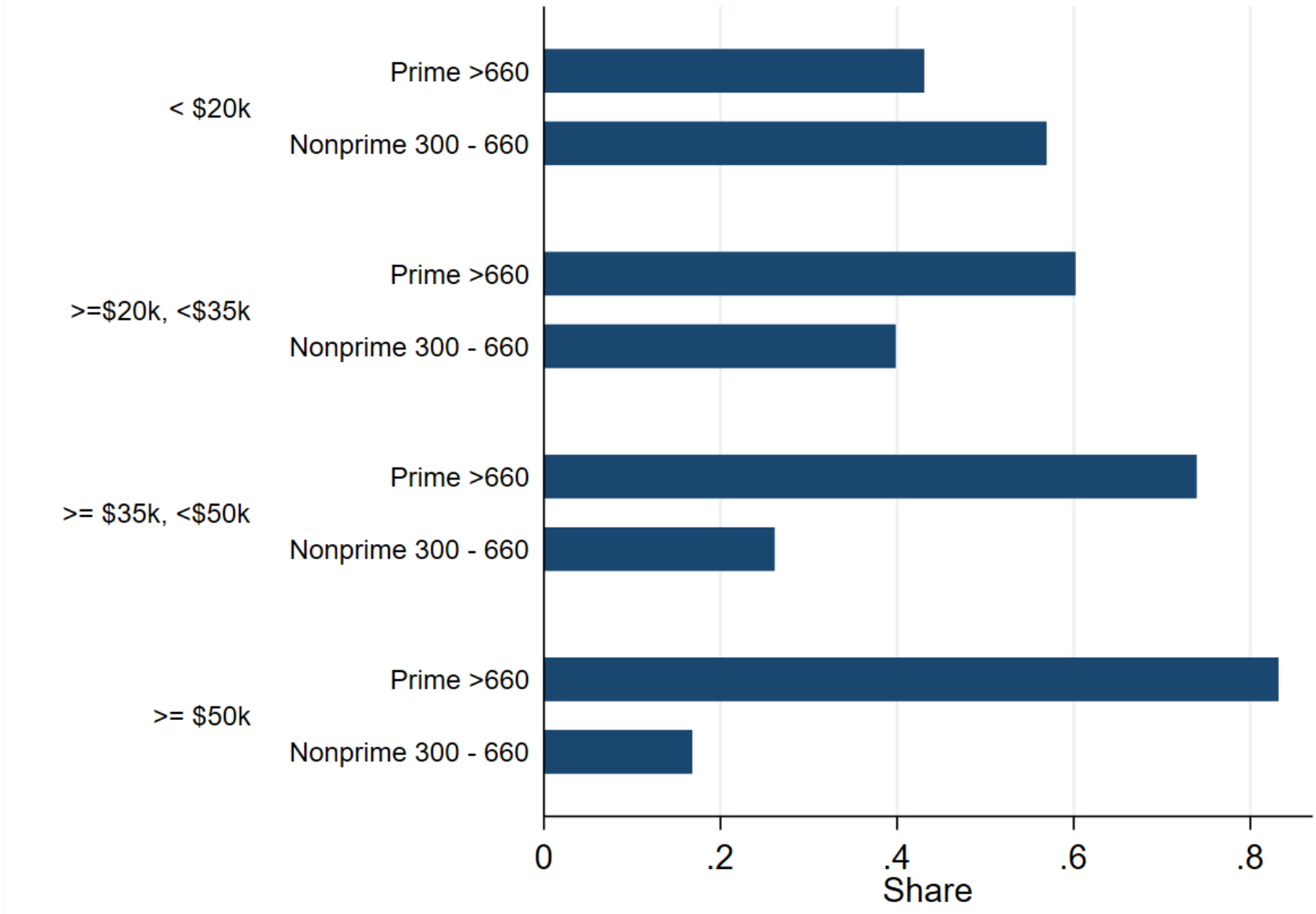
- What are the financial **consequences** of large spending on vehicles by non-prime consumers?
  - Delinquency, repossession, credit score, etc.
  - Standing of other financial accounts (credit cards, mortgages, etc.)

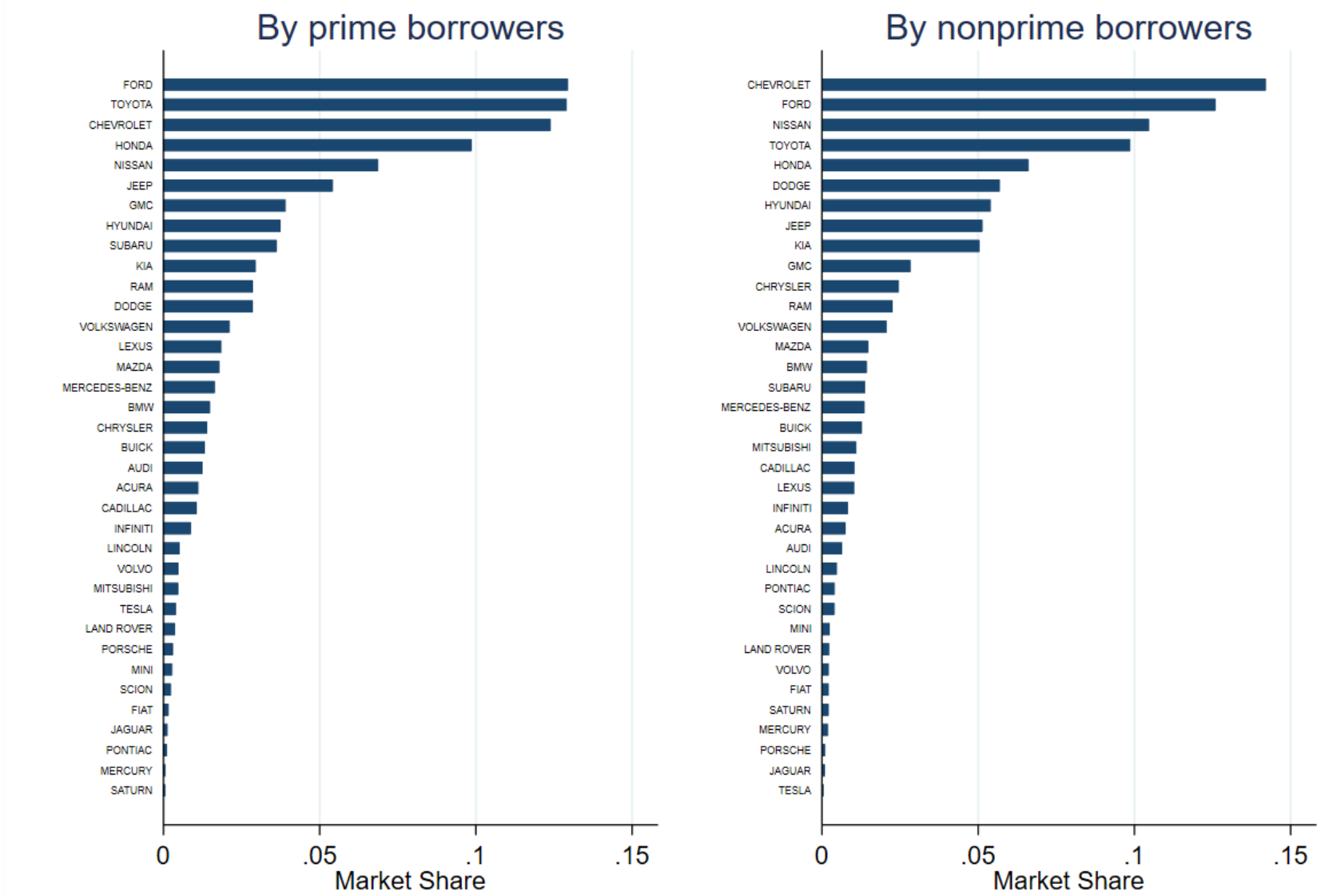
Data

- AutoCount– Experian Monthly Report on auto loan underwritings
  - Brand/make, model, new/used, segment
  - By consumers' Zip Code
  - By consumers' credit score
  - 2015-2019
- New York Fed/Equifax Consumer Credit Panel
  - Monthly financial outcomes:
    - Balance
    - Delinquency status, Repossessions, Charge-offs
    - Credit Scores
  - Trade line level
  - Observe consumer identifier

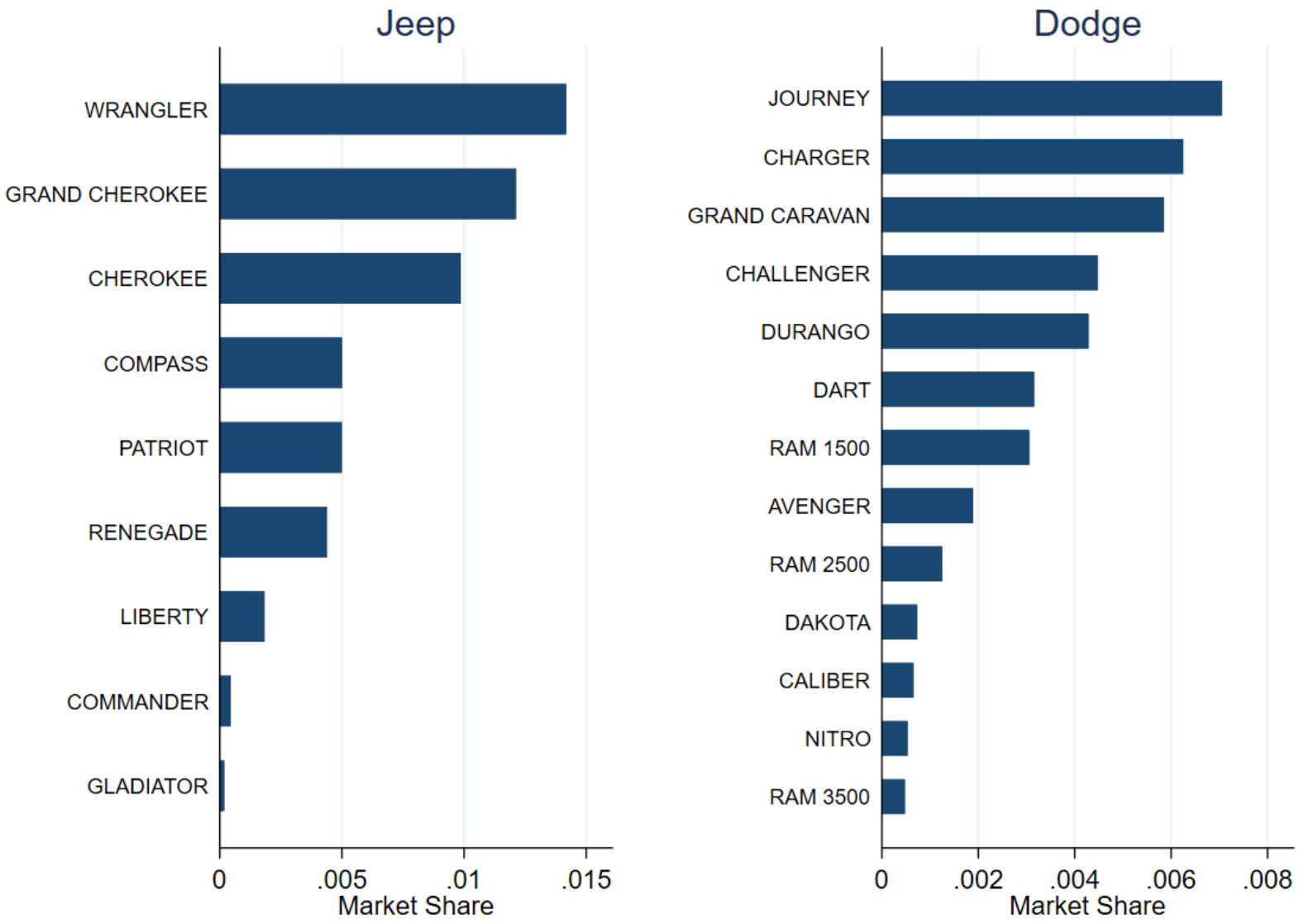
Who Buy Expensive Vehicles?



Brand Market Shares



Model Market Shares



Empirical Framework: Relative Demand for Prestige

- Estimate the demand for prestige relative to the average consumer:

$$\log(s_m^k) - \log(\bar{s}_m) = \alpha_k - \bar{\alpha} - (\beta_k - \bar{\beta}) \log(P_m) + (\eta_k - \bar{\eta}) F(X_m) + (\gamma_k - \bar{\gamma}) c_m + \delta^k - \bar{\delta} + \zeta_m^k - \bar{\zeta}_m$$

- c_m – We measure prestige by computing the share of vehicles sold per brand/make that are classified as luxury.
  - Define luxury on segment (luxury, premium, or upscale)
  - For robustness, also based on the value of new vehicles.

Results: Demand for Prestige Stronger for Non-Prime

	Dep Var: Relative Log (Model Market Share)			
	(1)	(2)	(3)	(4)
Log (Model Value)	-0.6840***	-0.6836***	-0.6819***	-0.6868***
	(0.0098)	(0.0098)	(0.0098)	(0.0010)
Brand Luxury Share	0.0536***	0.0753***	0.0547***	0.0902***
	(0.0102)	(0.0104)	(0.0116)	(0.0075)
Brand Pick-up Share		0.1219***	0.1127***	
		(0.0101)	(0.0101)	
Brand Alt-Energy Share			-0.1303***	
			(0.0219)	
Luxury Definition	Segment	Segment	Segment	Model Value
Observations	99,913	99,913	99,913	99,913

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- In general, prime/higher-income consumers buy *more expensive* and *more prestigious* vehicles on average
- Preferences for conspicuous prestige in vehicles
  - $\rightarrow$ Willing to pay more for prestige
- Prestigious brands come with higher price tag on average
  - $\rightarrow$ Buy more expensive vehicles

Demand for Prestige: Status Signaling

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- Consumer cares about his/her status of *perceived* income relative to her social reference group
- The society *does not* see true income but sees prestige consumption and income distribution of consumers' "tagged" groups – your friends, neighbors
- Since higher-income consumers on average buy more prestige:
  - Prestige would serve as a *signal* of one's status:
  - **Prediction:**Demand for prestige $\uparrow$ as reference group's mean income $\downarrow$ and income inequality $\uparrow$

Results: Evidence for Status Signaling (1/2)

		Dep Var: Relative Log (Model Market Share)				
		(1)	(2)	(3)	(4)	(5)
Log (Model Value)	Base	-0.6167***	-0.6392***	-0.4581***	-0.444***	-0.444***
		(0.0116)	(0.0114)	(0.0235)	(0.0239)	(0.0249)
	Black	-0.1869***			-0.0606*	-0.0632*
		(0.0572)			(0.0367)	(0.0379)
	Hispanic	-0.1845***			-0.0783**	-0.106***
		(0.0461)			(0.0315)	(0.0351)
	Asian	0.2314***			0.1895**	0.219**
		(0.0920)			(0.0749)	(0.0863)
	Income <$40K		-0.2731***		-0.1756***	-0.175***
			(0.0422)		(0.0320)	(0.0332)
	Income >$120K		0.4805***		0.4008***	0.428***
			(0.0479)		(0.0463)	(0.0504)
	Gini - 0.3783 - 0.4174			-0.1703***	-0.1204***	-0.1299***
				(0.0290)	(0.0274)	(0.0291)
	Gini - 0.4174 - 0.4576			-0.2140***	-0.1290***	-0.1338***
				(0.0262)	(0.0279)	(0.0293)
	Gini >0.4576			-0.1880***	-0.0784***	-0.0499*
				(0.0290)	(0.0289)	(0.0303)

Results: Evidence for Status Signaling (2/2)

Brand Luxury Share	Base	0.0685***	0.0284***	0.0680**	0.0518**	0.0294
		(0.0138)	(0.0101)	(0.0272)	(0.0240)	(0.0219)
	Black	0.3678***			0.2339***	0.2508***
		(0.0394)			(0.0261)	(0.0223)
	Hispanic	-0.1780***			-0.1546***	-0.0587***
		(0.0518)			(0.0281)	(0.0171)
	Asian	0.1363***			0.0786*	-0.0105
		(0.0480)			(0.0414)	(0.0414)
	Income <$40K		0.2030***		0.0781***	0.0749***
			(0.0435)		(0.0247)	(0.0192)
	Income >$120K		0.3414***		0.2681***	0.1906***
			(0.0376)		(0.0300)	(0.0214)
	Gini - 0.3783 - 0.4174			-0.0669*	-0.0203	0.0092
				(0.0355)	(0.0283)	(0.0248)
	Gini - 0.4174 - 0.4576			-0.0137	0.0333	0.0496**
				(0.0326)	(0.0266)	(0.0238)
	Gini >0.4576			0.2103***	0.2030***	0.1155***
				(0.0313)	(0.0288)	(0.0253)
Luxury Definition		Segment	Segment	Segment	Segment	Model Value
Observation		178,335	190,897	316,583	610,088	610,088

Demand for Prestige: Peer Emulation

- Demand for prestige is a function of peer's consumption of prestige
  - Keep up with the Joneses' visible prestige
- **Prediction:** non-prime consumers whose prime neighbors have a higher level of prestige consumption should have higher demand for prestige.

Results: Evidence for Peer Emulation

	Dep Var: Relative Log (Model Market Share)		
	(1)	(2)	(3)
Log (Model Value)	-0.8872***	-0.8347***	-2.3892***
	(0.0401)	(0.1800)	(0.3017)
Log (Model Value) × Prime Neighbors' Luxury Share	2.817***	1.4875	3.8768***
	(0.3515)	(0.9545)	(0.6518)
Brand Luxury Share	-0.1005	0.2940*	-1.2083***
	(0.0878)	(0.1575)	(0.2195)
Brand Luxury Share × Prime Neighbors' Luxury Share	2.8690***	3.9279***	2.6861***
	(0.6473)	(0.5287)	(0.5696)
Control for Neighborhood Chars × Log (Model Value) and X Brand Luxury Share	No	Yes	Yes
Luxury Definition	Segment	Segment	Model Value
	319,345	318,649	318,649

Impact of Large Spending on Non-Prime Consumers

- Trade Line level panel regressions, NY Fed/Equifax CCP data
- Observed consumer identifier.

$$Y_{ijt} = \beta_0 + \beta_1 log(Balance)_{ij0} + \beta_2 Score_{ij0} + \delta_i + \tau_t + \epsilon_{ijt}$$

  - i – borrowers
  - j – trade lines
  - t – months
  - $log(Balance)_{ij0}$ – Initial balance
  - $Score_{ij0}$ – Initial credit score

Delinquency

	Dep Var: auto loan delinquent less than 5 months			
VARIABLES	(1)	(2)	(3)	(4)
log (Initial Balance)	0.0110***	0.00117***	0.0379***	0.0280***
	(0.000207)	(0.000122)	(0.000746)	(0.000521)
Initial Risk Score	-4.31e-05***			
	(4.60e-06)			
Constant	-0.0550***	-0.00670***	-0.293***	-0.216***
	(0.00366)	(0.00118)	(0.00703)	(0.00495)
Sample	All	Prime (660-850)	Subprime (280-619)	Non-prime (280-659)
Observations	7,627,802	5,001,179	1,656,404	2,624,374
R-squared	0.244	0.203	0.261	0.249

Repossessions

	Dep Var: vehicle repossessed			
VARIABLES	(1)	(2)	(3)	(4)
Log (Initial Balance)	0.00138***	0.000238***	0.00556***	0.00369***
	(8.29e-05)	(3.39e-05)	(0.000351)	(0.000230)
Initial Risk Score	-1.22e-05***			
	(2.29e-06)			
Constant	-0.00102	-0.00189***	-0.0360***	-0.0242***
	(0.00172)	(0.000327)	(0.00327)	(0.00217)
Sample	All	Prime (660-850)	Subprime (280-619)	Non-prime (280-659)
Observations	7,627,802	5,001,179	1,656,404	2,624,374
R-squared	0.300	0.271	0.327	0.313

Credit Scores

	Dep Var: change from initial score			
VARIABLES	(1)	(2)	(3)	(4)
Log (Initial Balance)	0.551***	0.527***	-0.982***	-1.047***
	(0.0440)	(0.0640)	(0.210)	(0.161)
Initial Risk Score	-0.707***			
	(0.00125)			
Loan Age	0.00283***	0.0114***	0.00461***	0.00371***
	(6.91e-05)	(0.000103)	(0.000376)	(0.000290)
Constant	485.0***	-10.40***	10.44***	8.364***
	(0.976)	(0.625)	(2.024)	(1.554)
Sample	All	Prime (660-850)	Subprime (280-619)	Non-prime (280-659)
Observations	7,619,970	4,993,168	1,652,479	2,619,291
R-squared	0.543	0.505	0.474	0.459

Other Accounts

			Dep Var: delinquency in			
	Any Loan	Any Loan	Mortgage	Mortgage	Credit card	Credit card
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Log (Initial Auto Loan Balance)	0.000306***	0.0179***	1.91e-06	0.000776***	-7.61e-05***	0.00399***
	(1.58e-05)	(0.000121)	(3.65e-06)	(3.38e-05)	(9.89e-06)	(8.17e-05)
Constant	0.00858***	0.261***	0.000598***	0.0183***	0.00541***	0.125***
	(4.38e-05)	(0.000325)	(1.01e-05)	(9.05e-05)	(2.73e-05)	(0.000219)
Sample	Prime	Non-prime	Prime	Non-prime	Prime	Non-prime
Observations	18,817,166	10,417,767	18,817,166	10,417,767	18,817,166	10,417,767
R-squared	0.469	0.610	0.247	0.494	0.531	0.562

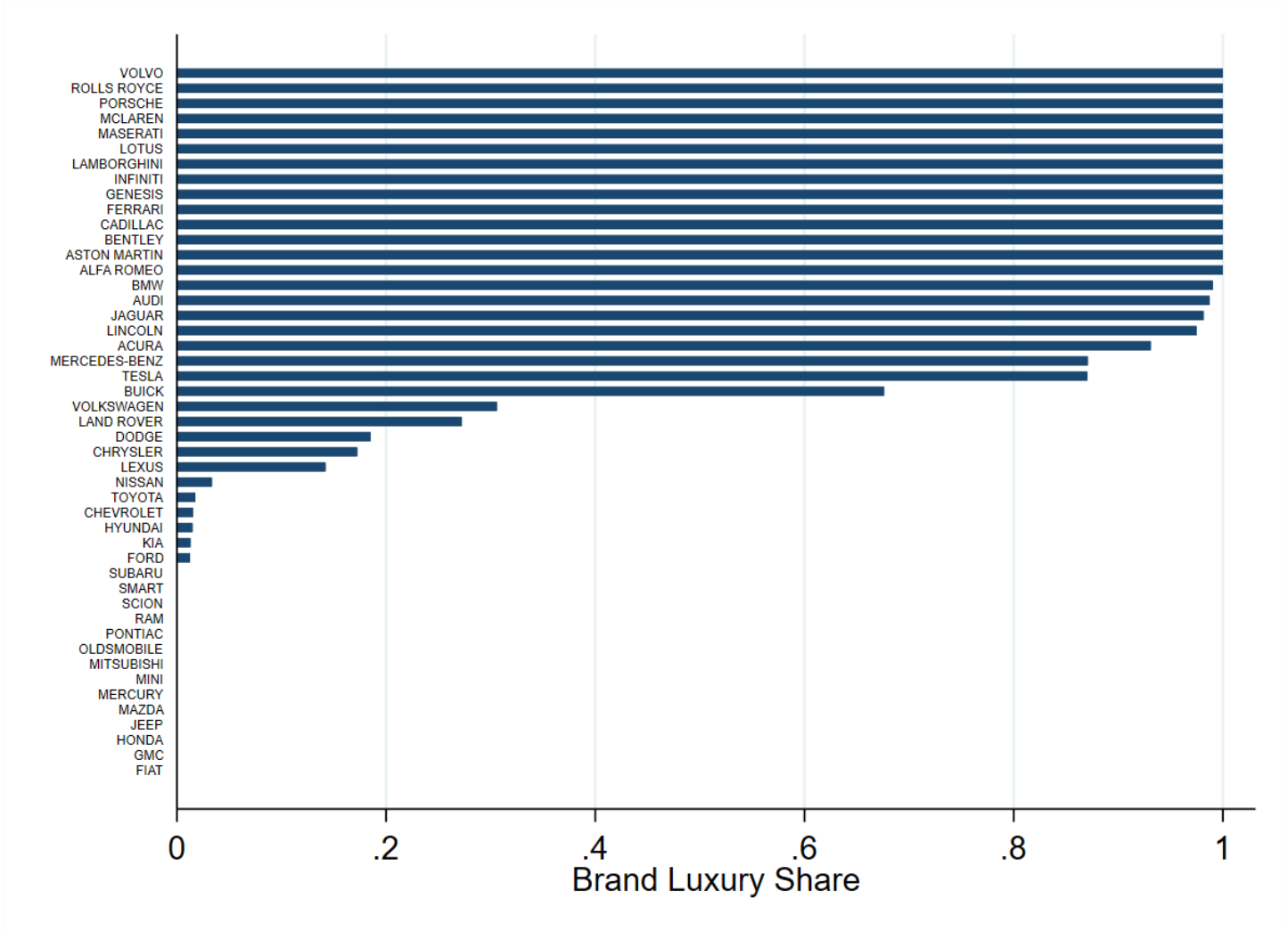
Conclusion

- We use a unique vehicle purchase data to analyze conspicuous consumption motives behind non-prime consumers' vehicle buying choices
- Non-prime consumers' demand for expensive vehicles is partially driven up by their preferences for prestigious brands
  - Status Signaling
  - Peer Emulation (Keep Up with the Joneses)
- Larger borrowing on auto loans by non-prime consumers leads to adverse financial consequences

AutoCount Data: Average Transaction Characteristics

Transaction type	New	Used	All	All	New	Used	New	Used
Prime status	All	All	Y	N	Y	Y	N	N
Amount financed ($)	30,618	19,483	25,426	21,556	30,638	20,907	30,569	17,915
Vehicle value ($)	31,280	18,658	26,550	19,310	32,970	20,988	27,287	16,095
Loan-to-value ratio	1.12	1.49	1.21	1.54	1.05	1.34	1.27	1.65
Interest rate (%)	5.25	9.15	4.54	12.13	3.78	5.20	8.72	13.51
Maturity term (months)	69	64	66	66	67	65	73	64
Monthly payment ($)	517	373	432	426	509	365	535	381
Total (million)	26	40	40	27	18	21	7.8	19

Measure of Prestige – Share of Luxury Models Sold Per Brand



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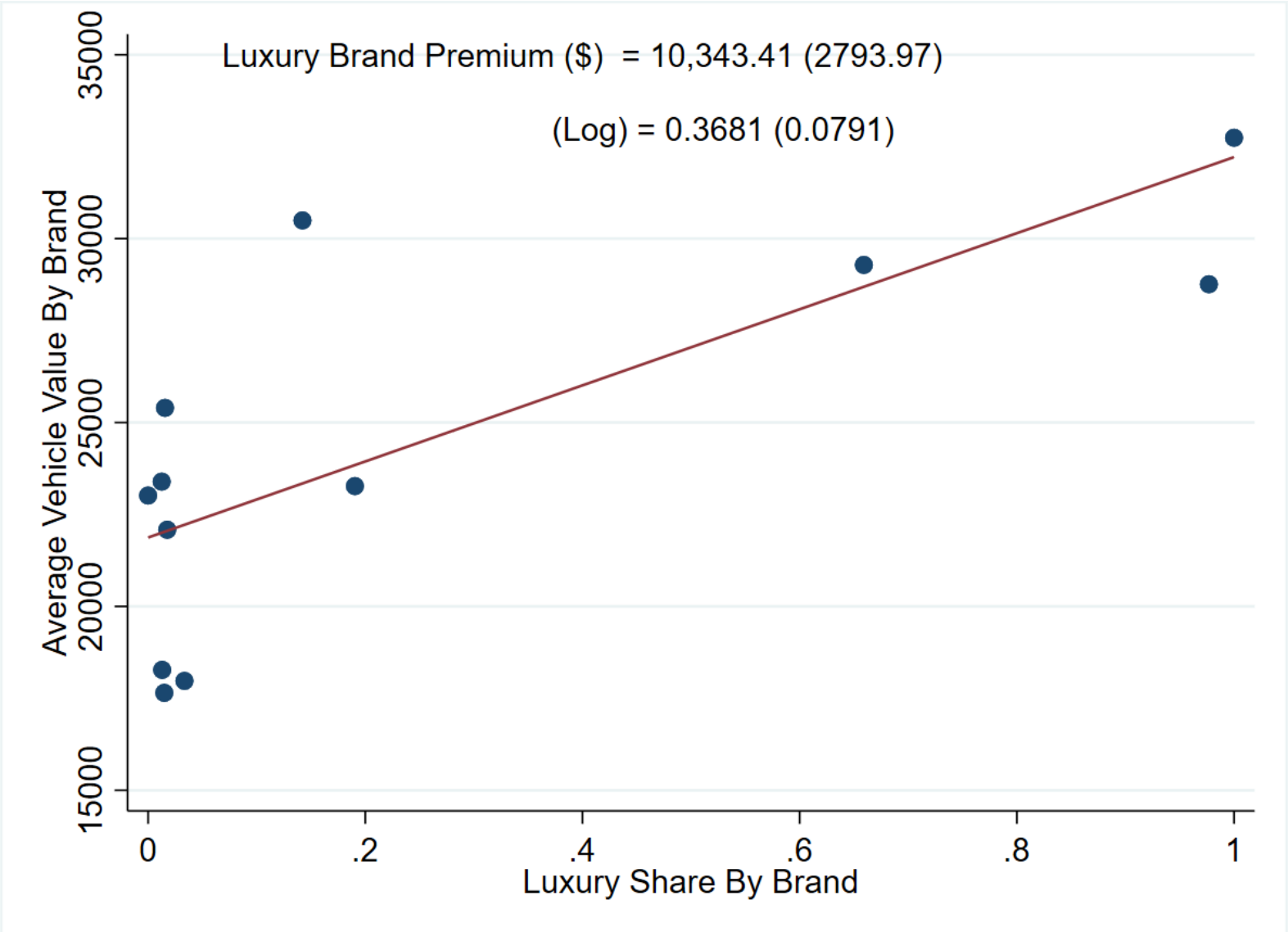
Brand Luxury Premium



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